

Progression in Programming

Foundation Stage and Key Stage 1



	Foundation (EYFS expectation)	Year 1	Year 2
<p>POS statements Sept 2014</p>	<ul style="list-style-type: none"> Recognise that a range of technology is used in places such as homes and schools Select and use technology for particular purposes. 	<ul style="list-style-type: none"> Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs Recognise common uses of information technology beyond school. 	
<p>Children understand concepts</p> 	<ul style="list-style-type: none"> I can make a floor robot move. I can use simple software to make something happen. I can make choices about the buttons and icons I press, touch or click on. 	<ul style="list-style-type: none"> I can give instructions to my friend and follow their instructions. I can describe what happens when I press buttons on a robot. I can press the buttons in the correct order to make my robot do what I want. I can describe what actions I will need to do to make something happen and begin to use the word algorithm. I can begin to predict what will happen for a short sequence of instructions. I can begin to use software/apps to create movement and patterns on a screen. I can use the word debug when I correct mistakes when I program. 	<ul style="list-style-type: none"> I can give instructions to my friend (using forward, backward and turn) and physically follow their instructions to move in a shape I can tell you the order I need to do things to make something happen and talk about this as an algorithm. I can program a robot or software to do a particular task. I can look at my friend's program and tell you what will happen. I can use programming software to make objects move. I can watch a program execute and spot where it goes wrong so that I can debug it.
<p>Teacher enables progress</p> 	<ul style="list-style-type: none"> Provide floor robots, remote control toys and exploratory software for children to use Talk about where technology is used in the school and the world around 	<ul style="list-style-type: none"> Provide opportunities for children to give and follow instructions to move about the playground or hall Provide opportunities for children to explore what happens when different buttons are pushed on a floor robot and to predict what will happen when a sequence of buttons are pressed Encourage children to talk about the algorithm that will move a floor robot to a specified position Talk about the buttons that will need to be pressed on a floor robot to execute the algorithm Provide a range of technologies for children to discover outcomes for different inputs Provide opportunities for repeated experiences of programming robots, models and on-screen turtles to achieve particular outcomes Talk about precise instructions and debugging a program Talk about sequencing activities across the curriculum as examples of algorithms Talk about where programming is used in the school and the world around 	
<p>Children build skills</p> 	<ul style="list-style-type: none"> Help adults operate equipment around the school, independently operating simple equipment Use simple software to make things happen 	<ul style="list-style-type: none"> Physically follow and give each other instructions to move around Explore outcomes when buttons are pressed in sequences on a robot 	<ul style="list-style-type: none"> Physically follow and give each other forward, backward and turn (right-angle) instructions Articulate an algorithm to achieve a purpose Plan and enter a sequence of instructions to

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	<ul style="list-style-type: none"> Explore options and make choices with toys, software and websites Press buttons on a floor robot and talk about the movements 	<ul style="list-style-type: none"> Begin to identify an algorithm to achieve a specific purpose Execute a program on a floor robot to achieve an algorithm Begin to predict what will happen for a short sequence of instructions in a program Begin to use software to create movement and patterns on a screen Use the word debug to correct any mistakes when programming a floor robot 	<ul style="list-style-type: none"> achieve an algorithm, with a robot specifying distance and turn and drawing a trail Predict what will happen and test results, Explore outcomes when giving instructions in a simple Logo program Watch a Logo program execute using 'allow programming' and debug any problems Talk about similarities and differences between floor robots and logo on screen <p>(Software could also be used to control a model.)</p>
<p>Suggested activities for children to develop process</p> 	<p>www.poissonrouge.com Explore activities. How do you make things happen?</p>	<p>Draw a picture using TES iboard drawing with a control toy. (Change to the white coloured pen to move across picture.)</p>	<p>Can you write your name / topic word using TES iboard drawing with a control toy.</p>
	<p>Provide Bee-bots, building blocks and floor maps for the children to build their own exploratory activities. Resources to support the development of the use of Bee-Bot can be found on the Kent ICT website. Use Newham's Bear Hunt activity to develop purposeful use of Bee-Bot or other floor robot.</p>	<p>Set an obstacle courses for Bee-Bots for children to achieve specific outcomes. (Link to different curriculum areas.) Children talk about the algorithm they will need to follow as they plan a sequence of actions to achieve an outcome, before programming the Bee-bot. They debug any mistakes and look at programs planned by others to predict outcomes.</p>	<p>Children talk about an algorithm to move a Probot to a create an oblong or a square. They plan the program that will be required. They test the program and identify any bugs. They suggest solutions to sort out problems.</p> <p>Children talk about each other's programs and predict the outcomes..</p>
	<p>Children play with remote control cars and other 'push button' toys.</p>	<p>Play TES iboard Controlling Round a Route. Keep the control set to one turn being a quarter turn. (It could be used again with year 2s to talk about half and quarter turns.)</p>	<p>Play TES iboard cheese sniffer game with a friend. You have five moves each turn. Play in a pair against another to encourage talk about the 'most efficient' set of moves to get to the next cheese.</p>
	<p>Use online games such as those created by Kent to talk about controlling objects on screen. Five little ducks, five little speckled frogs, the Kaleidoscope, fat sausages, snowman maker and bubble trouble are all worth exploring.</p>	<p>Explore simulations in Big Day Out including the fishing trawler in Plymouth and the Apple Year in Somerset. Read about the different activities available in the SWGfL area but also explore activities all around the country.</p>	<p>Use Train Routes activity in SWGfL area of Big Day Out to find different routes to travel. (Train Routes in Swindon) Plan a the best sequence of steps to get your canal boat up and down the lock in the lest number of steps (Canal Lock in Wiltshire)</p>
	<p>Use the simple level of JIT within www.j2e.com/j2code for children to explore movement for the wolf in 3 little pigs or between flowers.</p>	<p>Use the simple level of JIT within www.j2e.com/j2code for children to plan movement for the wolf in 3 little pigs, Cinderella or for a desert adventure. Challenge the children to draw shapes on the blank background.</p>	<p>Use the advanced level of JIT within www.j2e.com/j2code for children to meet challenges using different backgrounds. Challenge the children to draw squares and rectangles on the blank background. Can they write their name?</p>

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	<p>Use 2Go (2Simple Infant Video Toolkit) to move the bee from flower to flower or to fly from planet to planet using the appropriate backgrounds. Set the key pad to direction.</p>	<p>Use 2Go (2Simple Infant Video Toolkit) or PurpleMash online tools to draw a picture. Compare with 'Drawing with a control toy. What is the same? What is different? Set the key pad to turning as soon as children can use the idea of a quarter turn.</p>	<p>Use 2Go (2Simple Infant Video Toolkit) or PurpleMash online tools to plan specific routes using the town and racing track backgrounds. Talk about the algorithm required and plan the program to execute it. Set the key pad to turning 90^o. Set children challenges to create programs for oblongs and squares or to create a letter. Talk about each other's programs and predict outcomes.</p>
	<p>Children have the opportunity to operate a microwave, talking about how they make it work and how it knows what to do.</p>	<p>Use Pivot stick animator for children to explore making a stick figure animation. They can plan a sequence of actions. Set a challenge and talk about the algorithm and steps necessary to achieve it.</p>	
	<p>Children have the opportunity to operate a photocopier, talking about how they make it work and how it knows what to do.</p>	<p>Use Lego WeDo to program actions for a lego model for programming experiences. Use Daisy the Dinosaur app to achieve the outcome of a variety of challenges. In year two encourage children to explore repeat command. Use Kodable and A.L.E.X app to meet closed challenges.</p>	
<p>Kent Trust website provides jackets to fit on your Bee Bot and cones for games with Bee-bot. Learning place provides free activities and resources. Bee-bot software can be introduced to transfer learning to the screen. Bee-bot App now available.</p>		<p>Explore movements using a Probot or other floor robot. Add a pen to the robot. What shapes can you create? Set a challenge to create a specific shape.</p>	